Customised Holiday Experiences through Artificial Intelligence: Case Studies from the Aviation and Hospitality Sectors

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Abstract

This article explores the impact of artificial intelligence (AI) on the aviation and hospitality industries, both of which are rapidly evolving due to technological advancements. It aims to understand the increasing importance of artificial intelligence by examining the various ways in which it is used in these sectors through qualitative research. The research included an analysis of online sources such as airport and hotel websites, booking platforms, and social media accounts of travel-related businesses. This comprehensive data collection provides insight into the various applications of artificial intelligence in tourism. Thematic analysis was then used to categorise the data according to similar uses, providing a detailed understanding of the role of AI in these areas. It compares and examines artificial intelligence applications adopted by aviation and hospitality organisations, evaluating their effectiveness and differences. The study reveals the various ways in which AI is being integrated into these industries and highlights its significant contributions across various dimensions. It also highlights how AI can deliver competitive advantage, improve customer experiences, and introduce innovative paradigms to the aviation and hospitality industries. One important aspect of the research is its ability to provide a deeper understanding of emerging AI trends in these sectors and lay a strong foundation for future research. Ultimately, this study provides valuable insight to stakeholders in aviation and hospitality, equipping them with an informed perspective on leveraging AI for growth and long-term sustainability in their respective industries

1. Introduction

The tourism sector is currently undergoing a rapid transformation on a global scale, characterised by new dimensions emerging due to the influence of technological advancements. This transformation has been prominently highlighted by Benckendorff et al. (2019), Gövce (2020), Popkova et al. (2021) and Rezaei et al. (2022). As underscored by Shin and Perdue (2022), stakeholders within the tourism industry are demonstrating a steadfast commitment to harnessing innovation and technology as catalysts for comprehensive sector-wide transformation. This unwavering commitment is rooted in the urgent need not only to meet the increasing demand for tourism but also to enhance and personalise the overall visitor experience while simultaneously strengthening their competitive position in the market. In this context, as noted by Doborjeh et al. (2022), advanced technologies like artificial intelligence contribute significantly to the transformation and growth processes of the tourism sector.

In recent years, there has been a noticeable increase in the impact and importance of artificial intelligence (AI) applications in the aviation and hospitality sectors. This phenomenon has been extensively studied by researchers, with contributions from Iranmanesh et al. (2022), Sridhar and Bell (2022), Nam et al. (2021), and Kumar and Thakur (2012),

among others. These sectors, which are an integral part of the broader tourism industry, have undergone transformative changes as they adopt AI technologies to streamline their operational processes. Simultaneously, this study particularly investigates how businesses in aviation and accommodation, essential components of the tourism industry, adopt artificial intelligence technologies and enhance their operational processes. It is well known that tourism stakeholders enhance customer experiences and gain competitive advantages by integrating artificial intelligence into their business strategies (Samara et al., 2020). Furthermore, the broad-ranging contributions of artificial intelligence applications to the tourism sector, along with future strategies and the potential for sustainable growth, are crucial (Saydam et al., 2022).

The innovations and advantages generated by artificial intelligence applications in the tourism sector have the potential to enhance operational efficiency, elevate customer satisfaction, and offer personalised experiences for businesses (Gündüz et al., 2023; Knani et al., 2022; Li et al., 2021). The significance of this study lies in contributing to the understanding of the transformation of the tourism sector in terms of growth and competitiveness and shedding light on the role of artificial intelligence in this transformation.

Most of the existing research has separately addressed aviation and accommodation (Tepylo et al., 2023; Limna, 2022; Garcia et al., 2021; Molchanova, 2020; Yang et al., 2020; Gündüz & Gündüz, 2017). What sets this study apart

from similar works in the literature is its focus on different tourism components, amalgamating sectors like aviation and accommodation to explore how the utilisation of artificial intelligence differs across these industries. Additionally, by considering the potential benefits and challenges of artificial intelligence applications from the perspective of businesses and tourists, the study offers a comprehensive outlook.

Studies show that artificial intelligence is a candidate to be a decisive competitive factor for the tourism sector in the future (Bhatia et al., 2022; Pérez-Campuzano et al., 2021; Ercan, 2020). In the following sections of the article, various aspects and effects of artificial intelligence applications in the tourism sector are examined in depth, especially focusing on how they enable transformation in the aviation and accommodation sectors. Additionally, the study underlines the critical role that artificial intelligence can play in promoting sustainable growth and development in the tourism sector and offers recommendations for future research and applications. Ultimately, this study aims to provide a comprehensive perspective that enriches our understanding of the potential of artificial intelligence to shape the future of the tourism industry.

2. Materials and Methods

This research adopts a qualitative research design to investigate the utilisation of innovations, particularly artificial intelligence (AI), within the aviation and hospitality industries. Qualitative research is chosen as the preferred method due to its capacity to facilitate in-depth comprehension, exploration of phenomena, and detailed examination of specific topics (Ritchie & Lewis, 2003). This research approach centres on the analysis of textual, visual, or audio data rather than the quantitative analysis of numerical data (Ilgar & Ilgar, 2014). The primary objective of this study is to extract valuable insights pertaining to the intricate integration of AI within the aviation and hospitality sectors.

The central aim of this research is to provide a comprehensive elucidation of the utilisation of artificial intelligence tools within the aviation and accommodation sectors based on the information available on websites. In this context, the chosen research methodology is web content analysis. Web content analysis is recognised as a qualitative research approach that systematically and quantitatively assesses textual content in an objective manner (Wimmer & Dominick, 2013). To accomplish this, the researcher extensively engages with a diverse range of online resources, including the websites of airlines and airports, hotel websites, official social media accounts of travel-related businesses, reservation platforms, industry reports, and scholarly articles. This thorough approach involves a comprehensive investigation of artificial intelligence applications in both the aviation and hospitality sectors. The study involves the analysis of data collected from 55 companies operating within these industries. These companies were identified as users of artificial intelligence through internet scans and subsequently became subjects of analysis in this research.

The collected data underwent thematic analysis. Thematic analysis, a sub-branch of qualitative research known as content analysis, is employed to derive meaning from complex textual data. Researchers identify recurring patterns, significant themes, and meaningful relationships by thoroughly examining texts pertaining to a specific topic (Terry et al., 2017).

In the initial phase, the researchers scrutinised the data for repetitive patterns and themes associated with AI applications. These themes encompass topics such as common use cases,

benefits, and evident trends. After identifying these themes, the researchers categorised AI applications based on their functional and effective similarities. This approach facilitated a structured and systematic analysis of diverse AI utilisation patterns within the aviation and hospitality industries.

The categorised themes were subjected to a more in-depth analysis in order to pinpoint significant patterns and emerging trends in the integration of artificial intelligence (AI). Pattern recognition, in this context, refers to the process of identifying recurring and unique structures, arrangements, or connections within the data. This process finds utility in various domains, including data mining, artificial intelligence, image processing, and natural language processing (Murty & Devi, 2015). The objective of this analytical phase was to identify recurrent patterns, such as enhancing customer service, utilising data analytics, and providing personalised recommendations. A total of 10 different themes were identified and presented in Table 6.

Multiple researchers carried out the cross-validation of categorized themes and identified patterns. Any discrepancies were meticulously addressed to enhance the credibility of the analytical process. The findings were then interpreted within the context of existing literature. The outcomes underscored AI's pivotal role in tackling challenges within the aviation and hospitality sectors, enhancing customer experiences, and driving innovation.

Consequently, this adopted methodology has facilitated a thorough exploration of AI applications within the aviation and hospitality industries. By rigorously categorising and adeptly recognising patterns through the amalgamation of diverse online resources, researchers have gained a deeper comprehension of AI's transformative impact. This approach not only enhances our understanding of emerging AI trends but also establishes a robust foundation for further academic exploration and informed decision-making within the industry.

3. Result and Discussion

In this section of the study, we provide a thorough analysis of how various industries utilize collaborative artificial intelligence (AI) applications to achieve a competitive edge. Specifically, we present a breakdown of AI applications employed by airlines, airports, the hotel industry, online reservation platforms, and price comparison websites in tabular format for clarity and reference. Later, these applications were analysed thematically and presented as main themes and sub-applications. The analysis delves into their strategies for increasing operational efficiency, enhancing customer experience, and other goals. This research provides important insights into how AI is reshaping industries, shedding light on both commonalities and distinguishing features, and shaping a clearer understanding of evolving environments. The names of the companies discussed in the study are given in the form of a "unique company code" in order not to cause copyright problems.

3.1. Artificial intelligence applications in airline companies

One of the sectors where artificial intelligence has been used the most in recent years is airlines (Abeyratne & Abeyratne, 2017). Companies in the airline sector are leveraging a range of AI applications to improve their operations and the customer experience. In Table 1, artificial intelligence applications of 13 airline companies are given. For example, AA uses chatbots to improve customer service, while BA analyses passenger requests to optimize routes and fuel

efficiency. QA uses AI for flight predictions and delay analysis to improve operational efficiency, and SQ uses passenger behaviour analysis to manage safety and maintenance.

Table 1. AI Applications in Airline Companies

Serial No	Company Code	AI Applications
1	AA	-Automatic flight tracking and management systems / Customer service with chatbot support / Price optimisation and analysis
2	BA	-Systems analysing passenger requests and preferences / Route optimisation and fuel efficiency
3	AF	-Use of AI in baggage tracking and management / Personalisation of customer experience
4	QA	-AI for flight predictions and delay analysis / Automation in human resources processes
5	SQ	-Systems analysing passenger behaviour to provide recommendations / Cabin maintenance and security management
6	CP	-Sentiment analysis applications for analysing passenger complaints / Internal efficiency and process automation
7	ANA	-Route optimisation and flight tracking systems / Analysis of sensor data in aircraft maintenance
8	AC	-AI applications for baggage and passenger management / Air traffic analysis and predictions
9	EY	-Dynamic pricing systems based on passenger preferences / Personalization in-flight services
10	THY	-Dynamic Pricing / Chatbot Service / Baggage Tracking and Optimisation / Recommendation Engines
11	QR	-Use of AI in flight safety and risk analysis / Chatbot-assisted reservations
12	FR	-Price optimisation and predictions / Flight demand analysis and scheduling
13	WN	-AI for monitoring and improving operational efficiency / Staff management automation

AC uses AI for passenger and baggage management, and EY employs dynamic pricing based on passenger preferences to provide personalised travel experiences. FR gains a competitive edge through price optimisation and demand analysis, while WN uses AI to improve operational efficiency. THY uses artificial intelligence applications in a wide range of areas, from dynamic pricing to chatbot service, from baggage tracking to personalised travel recommendations, to improve customer experience, optimise operational processes, and improve maintenance forecasts. Carrier and Fiig (2018) also underlined in their study that airlines use artificial intelligence to guide their pricing strategies and increase profitability. In addition, Gupta and Jain (2023) stated that artificial intelligence has begun to be used with ethics and confidentiality for personalised customer service. The airline industry primarily leverages personalised customer experiences, one of the most widely used AI applications, to stand out while simultaneously capitalising on varying applications to gain a competitive edge.

3.2. Artificial intelligence applications in airports

Artificial intelligence is currently used in many airports on key issues such as flight delays, airport environment, airport operational management, and airport security (Huang & Zhu,

2021; Ivanov & Webster, 2019). Airports are adopting a wide variety of AI applications to streamline passenger flow and optimise operational processes. In Table 2, artificial intelligence applications used by 12 international airports are presented. Accordingly, ICN facilitates fast transitions through passenger flow management and waiting time forecasts, while FRA improves the guest experience using artificial intelligence in baggage and cargo management. LHR analyses passenger movements through artificial intelligence at security controls, and HND improves efficiency in baggage and passenger management through automation and analytics.

Table 2. AI Applications in Airports

Serial No	Company Code	AI Applications
1	ICN	-Passenger direction and waiting time prediction systems / Baggage tracking and optimisation
2	FRA	-AI systems for baggage and cargo management / Personalization of passenger experience
3	LHR	-Use of AI in security checks / Analysis of passenger movements
4	HND	-Automation and analysis in baggage and passenger management / Enhancement of passenger experience
5	PEK	-Air traffic predictions and management / Terminal operations and staff direction
6	LAX	-Smart systems for baggage and security checks / Passenger direction and experience applications
7	DXB	-AI-assisted systems for baggage and passenger management / Air traffic analysis and management
8	ZRH	-Analysis of passenger movements for flight predictions and waiting times optimisation
9	HKG	-Smart systems for customs processes acceleration / Baggage tracking and security analysis
10	MUC	-Personalisation applications enhancing passenger experience / Passenger demand analysis and route management
11	IST	-AI systems tracking and directing passenger movements / Security and baggage analysis
12	CDG	-AI applications for tracking and optimising passenger movements / Route predictions

PEK utilises AI to forecast air traffic and manage terminal operations, and DXB employs AI-driven systems in baggage and passenger management. IST, on the other hand, uses artificial intelligence systems that monitor and direct passenger movements and artificial intelligence technologies for security and baggage analysis. Tang et al. (2022) also stated that artificial intelligence techniques are used to improve air traffic management in their studies.

Airports extensively employ artificial intelligence applications, particularly passenger movement analysis, to enhance transit efficiency. Nevertheless, as indicated in Table 2, the utilisation of artificial intelligence within airport operations is predominantly centred on baggage handling and passenger security. This observation is substantiated by the research findings of Koroniotis et al. (2020), Akcay & Breckon (2022), and Garcia et al. (2021).

3.3. Artificial intelligence applications in hotels

The hotel sector utilises a wide array of AI applications to enhance guest experiences and streamline operational processes. In Table 3, artificial intelligence applications used by 12 hotels are given. For example, HYT balances demand through dynamic room pricing, and WYN customises guest experiences, utilising predictive analytics for demand and inventory management. RAD stands out by optimising business processes, while BW enhances reservation management and customer service through guest preference analysis.

Table 3. AI Applications in Hotel Industry

Serial No	Company Code	AI Applications
1	HYT	-Dynamic room pricing systems / Analysis of guest requests
2	WYN	-Personalisation of guest experience / Demand predictions and inventory management
3	RAD	-AI applications optimising hotel operations / Human resources management
4	BW	-Analysis of guest preferences / Reservation management and customer service
5	CHC	-Recommendation systems based on guest preferences / Price optimisation and guest experience
6	IHG	-Developing marketing strategies using guest data / Room cleaning scheduling
7	SHA	-Personalised services based on guest preferences / Restaurant and spa management
8	MEL	-Smart systems optimising in-hotel operations / Workforce management and hotel efficiency
9	ACC	-Dynamic pricing and analysis of hotel prices and demand / Hotel marketing strategies
10	MRT	-Guest preference analysis for personalised recommendations / Room cleaning management
11	HIT	-Guest experience enhancement through AI applications / Room service and request management
12	FRS	-Personalised experiences based on guest preferences / Luxury service management

CHC enhances guest experience through recommendation systems based on preferences, and IHG tailors marketing strategies to guest data. The hotel industry primarily uses customised services, one of the most extensively used AI applications, to compete effectively, while simultaneously focusing on various applications to maximise efficiency.

Artificial intelligence has significantly transformed the hospitality industry, with two particular applications standing out in terms of their widespread adoption: room pricing optimisation and the enhancement of customer preferences. Notably, in-depth research conducted by Manigandan & Raghuram (2022), Nam et al. (2021), and Yang et al. (2020) concurs with this observation, further solidifying the prominence of these AI-driven functionalities in the hotel sector.

3.4. Artificial intelligence applications in reservation platforms

The landscape of booking platforms has been significantly reshaped by the integration of artificial intelligence, ushering

in a new era of travel planning and deal optimization (Lv, et al., 2022). In Table 4, information is given about the artificial intelligence tools used by reservation applications. In this context, notable AI applications such as AGD and PCL work in tandem to tailor recommendations according to individual user preferences, while HTLS takes a different route, leveraging guest reviews to steer reservation decisions. Additionally, platforms like HOME and VRBO extend their capabilities by aiding users in comprehensively assessing rental preferences and a myriad of accommodation options.

Table 4. AI Applications in Booking Platforms

Serial No	Company Code	AI Applications
1	AGD	-Recommendation systems based on user preferences / Price comparisons and predictions
2	PCL	-Price predictions for flexible date searches / User behaviour analysis
3	HTLS	-Analysis of guest reviews / Directing hotel reservation requests
4	HOME	-Analysis of rental requests and preferences / Price comparisons
5	VRBO	-Chatbots facilitating communication between hosts and renters / Price analysis
6	EXP	-Analysis of travel trends / User demand predictions and price optimisation
7	BOOK	-Recommendations based on user preferences / Hotel ratings
8	ORBT	-AI applications comparing flight and hotel prices / Reservation management
9	TRVLC	-Travel package recommendations and price analysis / User feedback analysis
10	ABNB	-Personalisation of accommodation options / Rental price predictions and demand analysis
11	TRPD	-Sentiment analysis of hotel and restaurant reviews / Travel trend predictions
12	KYK	-Comparing different travel options / Price trends and predictions

Within the domain of travel and lodging reservations, the ubiquity and transformative impact of artificial intelligence are unmistakable. Platforms such as EXP have harnessed the capabilities of AI to meticulously analyse prevailing travel trends, thereby endowing them with the capacity to proactively anticipate and address user requirements. In parallel, the distinctiveness of TRVLC emerges not solely from its adeptness at delivering curated travel package recommendations but also from its adept utilisation of intricate price analytics, thereby significantly enriching the decision-making landscape.

A pivotal arena of competitive differentiation among reservation platforms resides in the realm of AI-fuelled personalised recommendations—a strategic thrust heavily contingent upon discerning user predilections. Notably, the orchestration of this strategy is underpinned by an eclectic amalgamation of methodological approaches, adeptly calibrated to harmonise with the nuanced idiosyncrasies of user demands.

A comprehensive scrutiny of Table 4 underscores a preponderance of AI applications gravitating towards comparative analysis and personalized tailoring within the repertoire of these booking platforms. This thematic alignment corroborates the salient findings accentuated in Table 3, wherein analogous AI-driven interventions were observed within the purview of hotels, specifically oriented towards the

customization of their room typologies in consonance with individual proclivities. Evidently, the empirical insight gleaned from Popesku's (2019) empirical investigation articulates the discernible evolutionary trajectory of AI applications in the tourism sector, progressively converging towards a pronounced emphasis on bespoke personalization. A congruent sentiment reverberates in the scholarly discourse elucidated by Pinheiro et al. (2021), which underscores the instrumental role of artificial intelligence in predicting reservation cancellations—an affirmation of its manifold utility within the precincts of the industry.

3.5. Artificial intelligence applications in price comparison systems

Price comparison platforms, operating as intermediaries between consumers and service providers, have harnessed the capabilities of artificial intelligence (AI) applications to effectively facilitate the identification of optimal cost-effective alternatives and to discern prevailing patterns within the realm of travel expenditure (Gössling & Lane, 2015). Notably, Table 5 provides insights into the deployment of AI applications within 10 distinct price comparison websites. For instance, SKY and GFL exhibit proficiency in curating superlative deals by virtue of their capacity to undertake comprehensive comparisons of flight fares. In a parallel vein, TRVGO and MMD specialise in assisting users in evaluating and contrasting hotel tariffs, thereby aligning with the fundamental ethos of the price comparison paradigm.

Table 5. AI Applications in Price Comparison Websites

Serial No	Company Code	AI Applications
1	SKY	-Flight price comparisons and predictions / Analysis of travel trends
2	GFL	-Flight and hotel price comparisons / Price predictions and flexible date searches
3	TRVGO	-Hotel price comparisons and ratings / Analysis of travel trends
4	MMD	-Price analysis and travel trend predictions / User preference analysis
5	HPNK	-Comparing different travel options / Travel planner and predictions
6	KYK	-Flight and hotel price comparisons / Analysis of travel trends
7	CPAR	-Flight price comparisons and predictions / User preference analysis
8	EXP	-Comparing different travel options / Price trends and predictions
9	FRCMP	-Flight price comparisons / Flexible date searches and price analysis
10	TVZOO	-Analysis of travel offers / User demand predictions

As seen in Table 5, KYK employs an in-depth examination of prevailing travel patterns to determine user preferences, thus harmonising services with individual inclinations. In contrast, CPAR capitalises on its proficiency in assessing and contrasting flight costs, reinforcing its commitment to addressing a diverse array of user demands. Price comparison websites, as their nomenclature implies, prominently leverage the artificial intelligence component of price juxtaposition. This strategic orientation is defined by a strong emphasis on personalised recommendations that align with user preferences. Simultaneously, these platforms embrace a variety of approaches to cater to the multifaceted needs of their users.

Upon reviewing Table 5, a congruence with the core theme of these platforms—price comparison—becomes evident, as they prominently focus on presenting holiday options that align with consumers' financial capabilities. Furthermore, informed by insightful analyses of flight and lodging trends, these platforms adeptly provide advice regarding cost-effective timeframes and favourable pricing, thereby enhancing their appeal to users. This trend is also echoed by Ivanov & Webster's (2019) research, corroborating the practical alignment of these practices within the industry context. In conclusion, a comprehensive assessment spanning airline companies, airports, hotels, reservation platforms, and price comparison websites underscores a diverse array of artificial intelligence applications, thoughtfully tailored to suit industry-specific demands and customer preferences.

3.6. Sectors-specific application of artificial intelligence: themes and sub-applications analysis

In this section, the prevalence of artificial intelligence applications among different industries was explored, and shared strategies across various industries were revealed. The chart reviews clearly show that, despite industry differences, companies are adopting similar AI practices to improve customer experiences, operational efficiency, and processes. This study examines in detail the trends facilitating personalised innovation in areas such as airlines, airports, hotels, reservation platforms, and price comparison websites in order to increase competitive advantage.

When the tables are examined, it can be interpreted that companies in different sectors are trying to gain competitive advantage by using similar artificial intelligence applications. In the study of Dwivedi et al. (2023), it was emphasised that similar artificial intelligence applications are used in the tourism sector. Every industry, which has goals such as personalizing customer experiences, increasing operational efficiency and optimizing operational processes, adopts various artificial intelligence applications. For example, airlines (such as AA, BA, QA, SQ and AC) are using AI applications to improve customer service, predict flight patterns, and increase operational efficiency. The study of Le Clainche et al. (2023) also stated that studies have been made to improve aircraft performance using machine learning. In addition, Singh et al. (2022) found that artificial intelligence is used to increase security in the transportation sector.

Similarly, major airports like ICN, FRA, IST, LHR, and HND employ a range of AI applications to handle passenger traffic, enhance security measures, and improve overall operational efficiency. Thums et al. (2023) emphasise the prevalent use of AI-based tools for both staff and customer interactions in airport environments.

In the hotel industry, encompassing HYT, WYN, RAD, and BW, a diverse array of AI applications is utilised to tailor guest experiences, predict demand trends, and optimise operational workflows. This aligns with Manigandan & Raghuram's (2022) findings, which highlight the increasing integration of AI within hotels, a trend projected to gain momentum in the future.

Reservation platforms (AGD, PCL, and HTLS) and price comparison websites (SKY, GFL, and TRVGO) actively seek a competitive edge by offering personalised recommendations and conducting user-focused price evaluations. Rawal et al. (2022) underline that AI's integration extends not only to operational aspects within reservation platforms but also extends its influence to these platforms' strategic engagements on social media platforms.

The widespread use of similar AI applications across various industries highlights the concerted efforts of

companies to understand consumer demands better and optimise their operational approaches. Prominent AI applications like personalised recommendations and competitive pricing are positioned to enhance customer loyalty and satisfaction in these industries.

From a competitive standpoint, it is apparent that companies within each industry strive to harness similar AI applications as a means of gaining a competitive edge. However, it is imperative to acknowledge that these companies also seek differentiation through the adoption of tailored AI

solutions designed to address the distinctive attributes and demands of their particular sectors. Consequently, although comparable AI applications find their way into various industries, they inevitably undergo customization to align with the specific prerequisites and goals of each sector. Table 6 provides an overview of sector-specific applications of artificial intelligence, encompassing thematic and sub-application analyses.

Table 6. Industry-Specific Artificial Intelligence Applications: Main Themes and Sub-Applications

Sector	Main Themes	Sub Applications
Airlines	Operational Efficiency and Analysis	♦ Automatic flight tracking and management systems ♦ Price optimization and analysis ♦ Route optimization and fuel efficiency analysis ♦ Personalization review and implementation
	Customer Services and Experience	♦ Customer service through chatbot support ♦ Analysis of passenger requests and preferences ♦ Flight predictions and delay analysis
Airports	Passenger Flow and Management	♦ Passenger routing and waiting time predictions ♦ Baggage tracking and optimization
	Security and Operational Improvement	♦ Use of artificial intelligence in security checks ♦ Enhancing airport operations ♦ Route predictions and air traffic analysis
Hotel Industry	Guest Experience and Enhancement	♦ Personalization of guest experiences ♦ Analysis of guest preferences ♦ Recommendation systems and price optimization
	Operational Efficiency and Business Management	♦ Optimization of hotel operations ♦ Dynamic pricing of rooms ♦ Development of marketing strategies
Online Booking Sites	User Experience and Guidance	♦ Recommendation systems based on user preferences ♦ Price comparisons and predictions ♦ Analysis of travel trends
	Reservation Management and Analysis	♦ Analysis of user behaviour ♦ Directing direct hotel booking requests ♦ Analysis of rental requests
Price Comparison Websites	Price Analysis and Comparison	♦ Comparing and predicting flight and hotel prices ♦ Analysis of travel trends ♦ Analysis of user preferences
	Travel Planning and Guidance	♦ Travel planning and predictions ♦ Price comparisons ♦ Recommendations based on user requests

The widespread use of similar AI applications across various industries highlights the concerted efforts of companies to understand consumer demands better and optimise their operational approaches. Prominent AI applications like personalised recommendations and competitive pricing are positioned to enhance customer loyalty and satisfaction in these industries.

From a competitive perspective, it's evident that companies within each industry aim to leverage similar AI applications to set themselves apart. However, it's important to recognise that these companies also pursue differentiation by adopting customised AI solutions that cater to the unique characteristics and requirements of their respective sectors. As a result, while similar AI applications are adopted across different industries, they inevitably adapt themselves to the specific needs and objectives of each sector. Table 6 includes sector-specific applications of artificial intelligence: themes and sub-application analysis. These differences can be seen as competitive factors. As a matter of fact, Gündüz & Topaloğlu

(2021) stated in their study that competitive advantage depends on the presence of factors that are difficult to imitate.

Examining the realm of sub-applications within each main theme reveals a plethora of specific adaptations tailored to the unique demands of industries. A comprehensive total of 31 distinct sub-items have been identified in this context. For instance, in the domain of airline companies, standout sub-applications include "personalisation evaluation and application" as well as "flight forecasts and delay analysis." Corroborating these findings, Soori et al. (2023) affirm that airline companies frequently harness artificial intelligence, machine learning, and deep learning. Additionally, Çolakoğlu (2020) underscores the use of machine learning algorithms for estimating flight delays at European airports.

This confluence of evidence underscores the dual imperative that airline companies place on heightening customer experiences and refining operational protocols. Shifting focus to airport operations, notable sub-applications encompass "passenger routing and waiting time forecasts" alongside the integration of "artificial intelligence applications

in security controls." These facets accentuate airports' intensive focus on efficiently managing passenger flows and enhancing security measures. A parallel insight from Çankaya's (2020) research highlights the amalgamation of security technologies and artificial intelligence at Shenzhen Airport.

In the realm of the hospitality industry, the prominence of sub-applications such as "personalisation of guest experiences" and "optimisation of hotel operations" underscores the sector's concerted endeavour to amplify guest contentment and streamline operational efficacy. Conversely, within the domain of online reservation platforms, emphasis is directed towards sub-applications like "suggestion systems based on user preferences" and "user behaviour analysis," aimed at enriching the user journey. Nannelli et al. (2023) lend further credence to this landscape by highlighting the infusion of artificial intelligence into demand forecasting. In essence, this mosaic of sub-applications underscores the alignment between specific functionalities and the overarching objectives of each sector. It illuminates the multifaceted ways in which artificial intelligence is harnessed to enhance customer experiences, streamline operations, and align with industry-specific imperatives.

The sub-applications within price comparison web platforms draw attention to specific functions like "comparison and estimation of flight and hotel prices" and "travel planning and guidance." These applications are strategically emphasised to align with the platforms' goal of offering competitive pricing and assisting users in planning their travels. This strategic emphasis is supported by the findings of Aparicio & Misra (2023), who substantiate this utilisation of technology in their study focusing on artificial intelligence and pricing.

The outcomes of this research yield valuable insights into the unique needs and priorities of each industry. These insights play a pivotal role in guiding the creation and implementation of AI solutions that are finely tailored to cater to the specific demands of each industry. The implications of these insights are far-reaching, as they have the potential to influence the trajectory of future AI initiatives and foster collaborative efforts among different industries, thereby paving the way for novel advancements.

At its core, this study offers a clear understanding of how AI applications are strategically integrated to address the distinct requirements of various industries. By shedding light on both the commonalities and differences that exist among these industries, this study serves as a valuable guide for shaping the direction of future AI projects. This alignment serves as a bridge between industries, facilitating the development of innovative AI solutions and ground-breaking progress.

The limitations of this research may be the following: First, there are data sources and sample limitations. The data was obtained through internet searches and may cause issues of timeliness or incompleteness. Additionally, a limited sample was used, which may limit the ability to make generalizations. Secondly, there are also time constraints because the data was collected within a certain date range and may not reflect the latest developments.

This study offers insights into shared trends among different sectors through an analysis of common overarching themes and specific subfields within artificial intelligence applications. In future research endeavours, a more detailed examination can be conducted to scrutinise both the similarities and disparities through comprehensive inter-sectoral comparisons. Furthermore, it is imperative to gain a deeper understanding of how each industry tailors AI solutions to address their specific demands through customised applications. Consequently, issues such as the ramifications of technological advancements, safeguarding data privacy, exploring novel application domains, assessing user acceptance, and fostering cross-industry collaborations warrant thorough investigation. These proposed avenues for research are poised to guide future academic inquiries and enhance comprehension of sector-specific artificial intelligence applications.

Ethical approval

Since this study does not include human-based data collection or experimental studies, it is among the studies that do not require ethics committee approval. The names of the companies discussed in the study are given in the form of a "unique company code" in order not to cause copyright problems.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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